Proceedings of SPIE - The International Society for Optical Engineering 2004 vol.5483, pages 208-213

The calculation of charged particles densities in gas flow discharge chambers

Safioulline R., Safioulline K.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Glow discharge in a gas flow is widely used for the creation of active mediums for powerful molecular gas lasers. In this paper transverse glow discharge chambers in electronegative gas flow were investigated numerically by alternating direction method. A case of continuous anode and partitioned cathode was considered. The rates of ionization and of electron attachment were received by means of the electron energy distribution function (EEDF) calculation. As a re sult, two-dimensional distributions of charged particles and of electric potential inside such chambers were obtained.

http://dx.doi.org/10.1117/12.563002

Keywords

Electric potential, Glow discharge, Number density, Spatial distribution